THE INAJA FIRE DISASTER

November 25, 1956

CLEVELAND NATIONAL FOREST

CALIFORNIA REGION

U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

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THE INAJA FIRE DISASTER

November 25, 1956

Cleveland National Forest

California Region

A. FOREWORD

Eleven men lost their lives in a flareup in San Diego Canyon on the Inaja Fire, Cleveland National Forest, at 8:05 p.m., Sunday, November 25, 1956. Those killed included three Forest Service employees, a Correctional Officer, and seven inmates of San Diego County's Viejas Honor Camp. One Forest Service employee and six inmates escaped uninjured.

1. Killed in action in line of duty

Name & Age	Fire Position	Regular Position
OVERHEAD		
Anderson, Albert W., 45	Night Sector Boss	Check-Scaler, Shasta-Trinity NF
Lingo, Carlton Ray, 19	Night Crew Boss	Tank Truck Operator Cleveland NF
Maxwell, Forrest B., 30	Night Crew Boss	Fire Control Aide Shasta-Trinity NF
Wehrung, LeRoy, 41	Correctional Officer	Viejas Honor Camp Mechanic (San Diego County)
VIEJAS HONOR CAMP MEN		
Daniels, Miles, 33	Firefighter	Inmate
Fallin, Wm. D., 22	"	"
Garcia, George A., 41	"	"
Hamilton, Virgil L., 26	"	"
O'Hara, Joseph P., 45	"	"

VIEJAS HONOR CAMP MEN (Contd.)

Shepherd, Lonnie L., 26	Firefighter	Inmate
Tibbitts, Joe, 34	"	"

2. Survivors

Name & Age	Fire Position	Regular Position
Joseph, Kenneth W., 22	Night Crew Boss	Foreman, Cleveland NF
Evans, Albert, 32	Firefighter	Inmate, Viejas Honor Camp
McGee, N. Y., 22	"	"
Metzke, Carl E., 20	"	"
Servidio, Frank, 21	"	"
Sloane, Herman, 18	"	"
Wood, Lionel, 35	"	"

B. CHIEF'S BOARD OF REVIEW

The Office of the Chief, U. S. Forest Service, was notified at 3:00 a.m. (Midnight, Pacific Coast Time), as soon as the Cleveland National Forest and California Region determined positive facts about the disaster.

Chief of the Forest Service Richard E. McArdle appointed a Board of Review charged with these responsibilities:

> "The scope of investigation should be directed to circumstances, events, and causes which led to the tragic loss of 11 firefighters.....The results of your deliberations should be summarized in a report as clear-cut and brief as is consistent with the subject and your responsibility, but in any case complete and thorough.....We want facts - what happened, how and why. Then we want those facts studied carefully and evaluated to formulate sound conclusions and recommendations - how could the final outcome, or any of the occurrences or situations leading up to it, have been avoided? Above all, what mistakes or weaknesses or oversights are there that can be prevented in the future? You must follow every possible lead to determine how we can tighten up our safeguards to prevent a similar disaster in the future. We cannot return the 11 men to their friends and loved ones but we can do everything in our power to see that similar suffering is never again caused by similar conditions."

1. Organization

Members of the Inaja Fire Board of Review:

William S. Swingler, Chairman
Assistant Chief, Washington, D. C.

Donald E. Clark
Regional Forester, Denver, Colorado

Lawrence K. Mays
Assistant Regional Forester, Atlanta, Georgia

Jack Barrows
Chief, Fire Research, Intermountain Forest & Range Experiment Station, Missoula, Montana

Merle S. Lowden, Secretary
Chief, Division of Fire Control, Washington, D. C.

Advisor to the Board:

Seth Jackson
Safety Officer, Washington, D. C.

Others Attending:

Thomas D. McGeary
Representing San Diego County, San Diego, California

Eugene H. Bertch
Representing State Division of Forestry, Riverside, California

M. M. Nelson
Chief, Division of Fire Control, San Francisco, California

Walter J. Puhn
Forest Supervisor, Cleveland National Forest, San Diego, California

Robert S. McBride
Fire Control Officer, Cleveland National Forest, San Diego, California

2. Preliminary Investigation

Chief McArdle immediately dispatched to the scene of the tragedy Merle S. Lowden, Chief of the Division of Fire Control, and Safety Officer Seth Jackson, both of Washington Office, to gather pertinent facts for the Board of Review. They spent November 27

through December 3 with California Region Fire Control Chief M. M. Nelson, and other Regional, Forest and Inaja Fire personnel studying the disaster area, interviewing and getting statements from those directly connected with the fire action, or who might have pertinent information.

3. Action by the Board

The Board assembled in San Diego on December 3. It studied the accident scene on December 4, both from the air and on the ground. On December 5, 6 and 8, these people were interviewed:

Peter F. Brown, Tank Truck Operator

Robert G. Burrows, Day Sector Boss

Clive Countryman, Forester (Research)
California Forest & Range Experiment Station

Jack P. Curran, Day Division Boss

John V. Davis, Night Line Boss

Jack Dillingham, Day Sector Boss

Wilbur V. Howard, Night Division Boss

Ralph A. James, Day Division Boss

Kenneth W. Joseph, Night Crew Boss

Robert S. McBride, Fire Boss

Clifford A. Miller, Service Chief

Walter J. Puhn, Supervisor
Cleveland National Forest

Glenn S. Robinson, Night Sector Boss

Rodney Sprigg, Rancher, San Diego County

Danny L. Street, Night Crew Boss

Relatives and friends of the victims, and the general public were invited to meet with the Board. Members of the Press were present. Mr. Richard L. Vaughn, an attorney representing Gilbert Paipa who confessed starting the fire, attended part of one day but made no comments. Mr. Robert Keddie, Co-Chairman of the San Diego County Citizens Forestry Study Group and Agricultural Director of Radio Station KFSD, and Mr. Merle Taylor, Member of the San Diego County Citizens Forestry Study Group

and Instructor of Biological Sciences at San Diego State College, attended part of one day but made no comments. Local rancher Rodney Sprigg was the only member of the general public who made a statement. He recommended to the Board that all Southern California brushlands be burned over every three to five years, to improve range and water conditions and to eliminate fire man-traps.

C. THE INAJA FIRE

1. General Description

The Inaja Fire allegedly was set by a 16-year old Indian, Gilbert Paipa, at his home on the Inaja Indian Reservation about 9:15 a.m., Saturday, November 24, 1956. He was apprehended by, and confessed to, Forest Service Investigator Elwood Stone, on Wednesday, November 28. Paipa said, "I just got a mad, crazy idea to do it. I threw a match in the grass to see if it would burn."

Before being controlled at 6:00 p.m., Wednesday, November 28, the fire burned 43,611 acres with a 90-mile perimeter within the Cleveland National Forest and adjoining land protected by the State. At least five homes were destroyed. More than 2000 men fought the fire, 1300 under Forest Service supervision. These included 500 Indians (local and Southwest Region), about 500 Navy personnel, 200 inmates from San Diego County and State Honor Camps, and other organized crews. These men plus 3 helicopters, 4 air tanker planes, 2 scouting planes, 27 bulldozers, and a fleet of 90 stake, tank and pickup trucks, formed one of the greatest arrays of men and equipment ever assembled to fight a forest fire in San Diego County.

2. Control Action

Two lookouts reported the fire at 9:15 a.m. A three-man tanker crew arrived at 9:25. They could not handle it. The lookout on nearby Cuyamaca Peak reported strong northeast winds up to 40 or 50 miles per hour. Acting Ranger John Davis recognized the fire's potential. By 5:00 p.m., the fire had crossed the San Diego River, run over Mt. Gower and down the west side of El Capitan Reservoir and onto El Cajon Mountain. It had burned an estimated 25,000 acres. Supervisor Puhn met with the California Division of Forestry and it was agreed that the State would handle all the fire west of the San Diego River except a portion on the north side of the fire between the river and Sawday truck trail. This Division was across the river from Division IV on which the tragedy later occurred.

Robert McBride, Fire Control Officer, Cleveland National Forest, was the Fire Boss. By Sunday, the Forest Service had four

divisions managed by experienced and qualified personnel from all parts of the California Region. Pine Hills Guard Station was fire headquarters and was one of the three Forest Service fire camps. Due to the rapid spread of the fire, over 1200 men and 300 overhead were serviced there the first two days. This resulted in some delays which affected line operations later.

By Sunday morning, the flanks had been contained except for three hot sectors - a hand line from Eagle Peak into the San Diego River on the south; across San Diego Canyon from rim to rim on the north; and across Cedar Creek at the rear of the fire. The latter was considered highest priority due to the threat to more than 100 homes nearby.

High winds made it impossible to use helicopters until 4 p.m. Night Line Boss Davis scouted Division IV at 4:30 p.m. Due to the wind, he had to fly high. This fact, coupled with the smoke from the fire, prevented getting much information as to control lines lost and progress of construction of other lines. The fire edge was quite hot; burning into the wind on the west side, more slowly on the east side. However, Davis judged the most critical part of the fire to be above camp in Cedar Creek Canyon and on the Sawday side of San Diego Canyon. He stated that the Division IV night crews had already left camp when he returned to Pine Hills Camp.

3. Fire Behavior

Fire weather throughout Southern California in 1956 was unusually severe. It was climaxed by a prolonged period of Santa Ana Wind Conditions 1/ extending from November 19 through the Inaja Fire Disaster on November 25. The area was having unprecedented drought. Rainfall had been well below normal for four years.

During the afternoon and evening of November 25, humidity in the vicinity of the fire was near 18 percent and temperature was about 68° F. Gusty east or northeast winds averaging 15 or 20 miles per hour, but with some gusts to 40 miles, were observed at many places around the fire.

Chamise and sage of medium density covered much of the disaster area. This brush was fine, with few large stems and an unusually high proportion of dead material. Moisture content of the brush was among the lowest ever recorded for these species, and believed near the minimum possible. The fuel fineness, the large proportion of dead material, the low moisture content of both dead and green material, and the brush species involved, all combined to make the fuel flammability extreme.

1/ Strong, dry winds from the desert area east of the coast mountains flowing down through the mountain passes and canyons to the sea.

The San Diego River bed was dry. There were steep, rugged, 70% slopes. Rock outcroppings were common on both sides. Distance from the rim to river bed was about 3500 feet.

During the day, the fire in San Diego River Canyon was advancing slowly up the canyon against the wind with occasional flareups. Tongues of flame intermittently moved ahead and up small side ridges. Fire on and just below the east rim of the canyon was quartering into the wind with occasional flareups when reaching heavy fuels.

4. Day Shift Action November 25

The job to be done on the east side of San Diego River Canyon (Division IV, Sector G) was to build a tractor line along the rim and a hand line from the rim to the canyon bottom. (See Figure 1.)

The tractor line was built along the east rim of the San Diego Canyon by 11:00 a.m. Tank Truck Operator Peter Brown and three men patrolled this line with a 280-gallon tanker. Brown used water on only one hot spot, and had about 250 gallons left for the night shift.

Division Boss Jack Curran and Sector Bosses Robert Burrows and Jack Dillingham on Sector G discussed the dangers of the fire below the rim several times. This fire threatened to outflank the first direct line between 9 and 10 a.m. The crew then went north along the rim and started an indirect line toward the canyon bottom. When it became apparent that this line could not be completed to the canyon before being outflanked, the crew was pulled out to the rim.

A third line (indirect) was started into the canyon just before noon about 300 yards farther along the rim. It was built on a spur ridge at the top of which was a large rock outcrop. There was some confusion about how this ridge was selected. Apparently, it was picked because it was the shortest route to the river and had the lightest fuel. Curran's original intention was to place the line on the next spur ridge up the canyon.

This absence of specific instruction also influenced takeoff of the line on the ridge. From the takeoff on the rim, the line was built around and under the outcrop of the ridge and down and over a 15-foot bluff. This was known as Line No. 3.

By 2 p.m., the crew had cut about 200 yards of line and estimated 3 more hours' work to reach the river bottom. Burrows had left Ernie, an Indian leader, on the bluff above the crew to give a warning if the fire picked up. The men were jumpy after being pulled out twice. At about 3 p.m., Curran withdrew the men from the third line because fire conditions seemed to make it unsafe to work there. The fire was picking up on the opposite side of the San Diego Canyon. Curran's crew observed men on the opposite side of the main canyon. No communication between these crews was established.

5. Night Shift Action November 25

Division Boss Wilbur Howard was given his assignment and briefed at the main camp. His assignment sheet gave instructions to "build line and burn out." There was little specific information on Sector G available in the main camp and Howard was told to check with Day Division Boss Curran for conditions on the ground.

The night shift (Division IV, Sector G) arrived at the fire after dark at 7:00 p.m. The overhead had had a reasonable amount of sleep. None of the overhead had seen this part of the fire in daylight. Between 4:30 p.m. and 7:00 p.m., the fire had quieted down.

Day Division Boss Curran gave Night Division Boss Howard and Night Sector Boss Anderson a briefing on fire conditions. He explained that during the day the wind had been tricky, and that difficulty had been experienced when burning-out operations were attempted. He suggested burning out only after the line reached the river.

Howard discussed the conditions with his two Sector Bosses and they agreed upon a plan of action. Sector Boss Glenn Robinson and Crew Boss Danny Street with 20 inmates were to burn out along the tractor line on the rim and down the hand line. Sector Boss A. W. Anderson with Crew Bosses Kenneth Joseph, Forrest Maxwell and Carlton Lingo, Correctional Officer Wehrung, and 13 inmates were to complete cutting and scraping the hand line to the river. At 7:18 p.m., Robinson and Anderson set their watches and decided on a radio check at 7:55 p.m.

Howard had the tanker located at the junction of the tractor and hand lines from where the crew strung hose down the hand line. This was to be used on the burning-out fire and spots over the line. The tanker crew started to wet down the burning-out fire. An appreciable amount of water was lost when the hose broke. The tanker went dry about 8 p.m.

Anderson took his sector crew down the ridge to build line to the river. Fusees were taken along as a safety measure. Joseph went down the hand line to where the scraping stopped. He was to take the men with the scraping tools and finish the day crew's line, following Anderson and the cutting crew. Anderson told the scraping crew he thought it would be a good idea to keep their eyes on the burning-out crew behind them. After his crew was working smoothly, Joseph started up the hill to check the line and to contact the burning-out crew.

D. THE FATAL FLAREUP

The winds had shifted. The fire was beginning to flare up in the bottom on the east side of the canyon. Across the main canyon, Division III Boss Ralph James and his Plans Chief Carl Wilson noted several headlamps on Division IV, Sector G, at about 7:35 p.m. They saw the fire flaring up below these men. At 7:40 p.m., they radioed, "There is some hot stuff below your line. It looks dangerous." The message came back, "We will check on it." Later, it developed this answer came from Division Boss Jim James several miles away who had a similar fire situation below him. The warning message from Ralph James apparently was never received by Howard's crews.

Crew Boss Joseph, going up the line to contact the burning-out crew, reached the top of the rock outcropping. He described what he saw as follows: "I looked back down into the canyon and could see that the fire was heating up and had made a few small runs up the canyon.

Just about that time, the fire in the bottom of the canyon made a good hot run toward the hill the men were working on. I then knew there was definitely some danger to the men building the indirect line, so I yelled to Lingo, 'Lingo, start the men out.' Lingo replied with something like, 'O.K.' At that time, I noticed that the crew quit work and started up the hill. I watched for a minute or two and saw that the fire was really starting to heat up and that when it got to the steep slope would really move fast. So again I yelled to Lingo, 'Lingo, hurry up.' Lingo answered, 'We are hurrying.' At that time, the fire started making a run up the canyon on the right of the man below me and I could still see they were moving along, and then before I knew it, the fire was in front of me on the bluff."

At the time of Joseph's first warning, the crew on the line had no realization of danger. However, Lingo repeated the first warning with a, "Let's go." The crew stopped work and immediately started up the line. The survivors reported there was no hurrying. Some of the men wondered why they were being called out. Most of the men kept their tools at first. One even picked up a shovel and canteen abandoned by another.

The crew had not travelled far until Joseph's second warning call came. The men were told to drop their tools and hurry. About this same time, the men realized they were in danger. All of them began to hurry up the cleared line. Some of the men passed others.

Correctional Officer Wehrung and the Forest Service personnel were telling the men to hurry and were helping some of them. Wehrung and Inmate Garcia stopped at a small open spot at the base of the rock bluff on the fire line. They told survivors who passed, this looked like the safest place. However, the survivors pressed on.

When McGee, Sloane, Netzke, Servidio and Evans got to the rock bluff, the fire was across the cleared line in front of them and close behind on their right. These five men turned to their left. McGee, Evans, and Sloane went up the rock outcrop first and Netzke and Servidio a little farther to the left. Servidio was about to "give out" and wanted to stop, but Netzke shoved him from below and then helped him from above. All five rushed the remaining 75 feet up the more gentle slope to the cleared cat line with the flames close to them on the right and only about 10 feet behind.

The 11 victims were cut off. Evidently the fire enveloped them from their right side and from behind. All were found within a radius of 45 feet of each other and the farthest was only 300 feet from the safety of the cat line, on the rim. The fire did not cross the cat line on the rim except for a few small spots.

It is not known exactly how or when Inmate Wood got out. He apparently went up the fire line earlier, and went out at the same time Joseph escaped.

The five inmates that escaped had been scattered throughout the entire crew. Two were with the group at the very bottom of the line. Correctional Officer Wehrung and the inmate closest to the top did not escape.

E. PROBABLE CAUSE OF FLAREUP

The disastrous run of the fire was observed by Division III Boss James and Plans Chief Wilson from across the canyon. After their 7:40 p.m. radio warning, three spots in the canyon were flaring up. By about 8:00 p.m., three ~~actually~~ actively moving fires had joined into a rapidly moving front which swept up the chimney-like ravine alongside the ridge where the men had been working. One hundred foot flames raced up the chimney. The fire hit the top of the ridge at 8:05 p.m., and then a flash-over suddenly swept 20 to 40 acres to the north of the chimney in which the fire blew up.

Study of the fire area by a fire research team from the California Forest and Range Experiment Station showed that the stage was set for the disastrous run of the Inaja Fire by a critical combination of dry fuels, Santa Ana winds and a chimney-like side canyon. However, a triggering action was still necessary to cause the explosive run to the canyon rim.

Fires burning in mountain canyons under Santa Ana winds are subject to unstable conditions. Fire and air movement become interdependent -- changes in one can cause changes in the other. Thus, a small triggering action that changes either air flow or fire behavior slightly, may set off a chain reaction that can cause major changes in the fire, local air movements or in both.

The fire run that trapped the men could have been triggered by a combination of the following phenomena now known to be present at various times in the canyon:

1. Local up-canyon wind as a result of eddies around a ridge across San Diego Canyon and a mile west of the tragedy site.

2. Local up-canyon wind as a result of a lull in the easterly down-canyon wind and an airfoil wind action over the canyon.

3. Rapid buildup of heat and convection on the fire burning below the crews when it reached more flammable fuel on steep slopes.

4. Effect of the burning-out fire at the top of the ridge in aiding development of a convection chimney up the steep ravine.

Once the run was started, the rapid buildup of heat developed a strong convection column up the ravine. Unburned gases carried upward by this column and trapped by the roll eddy below the canyon rim very likely produced the flash-over that crossed the fire line and enveloped the ridge and the men.

F. TRAINING & SAFETY

The Regional Fire Training Programs, both group and on the job, have been among the best in the Service. Since 1954, special Regional training meetings have been conducted for approximately 100 District Fire Control Assistants stressing fire behavior and management. Special advanced fire control meetings were reactivated in 1955 for Rangers and Staff Fire Control Officers. Sixty-eight were trained since then. Plans are set for another group this winter. These meetings include advanced type training in fire behavior training, plus problems in all phases of fire management. On-the-job training for selected overhead is conducted currently on the forests. For example, Forrest Maxwell, a qualified crew boss for Northern California, was sent to the Inaja Fire to be trained as a crew boss for Southern California conditions under the supervision of Anderson, a well qualified sector boss for all parts of California.

In addition to the above, each forest has annual group training meetings for fire overhead, stressing organization and fire problem cases, including behavior.

All of the overhead on the Inaja Fire were experienced and trained (See Appendix II for details). The same is true about organized crew members also. The Indians on this fire were members of "hot-shot" type crews which were given specialized job instruction before being sent on fire missions.

Inmate crews are called off the job at frequent intervals for two hours of intensive fire training. In addition, fire movies are shown evenings. This type of training is given recurrently because of the weekly turnover of inmates in these County Honor Camps. The Forest Service assigns a full time top foreman to each camp. He is responsible for training and leadership for all crews. Inmate fire-fighting experience is high due to the many fires occurring in each camp area.

The Cleveland Forest has an excellent safety program which could well serve as a model for any national forest. Disabling injuries have been rare in recent years.

Safety Code enforcement on the fire was good, with four possible exceptions:

1. Night lookout not as yet posted (Page 184, Para. 764.6).

2. Escape routes not stressed (Page 184, Para. 764.7).

3. Control was attempted on slow access and retreat area (Page 185, Para. 764.14c).

4. Weather forecasts not fully utilized (Page 185, Para. 764.14g).

G. CONCLUSIONS

1. Fire Behavior

The disastrous flareup of the Inaja Fire was caused by a critical combination of highly flammable fuels, steep topography, and adverse weather. The lull in the fire before and at the time of arrival of the night crews created a false sense of security, even though existing conditions of fuel, topography, and weather were critical.

Increased knowledge of these fire behavior factors, keen analysis of local fire weather forecasts in relation to each sector of a line, thorough understanding of wind characteristics in mountain canyons, adequate scouting of the fire area, and additional advanced fire behavior training for key fire supervisory personnel, are required to assure sound decisions on line location, placement of men, and conduct of burning-out operations.

2. Line Location

In the opinion of the Board, the location of Line 3, in preference to a line location on the next farther spur ridge, is questionable. This line location is considered questionable because of the previous behavior of the fire and the line position above and alongside a precipitous chimney which at the time was threatened by nearby fire.

The Board believes also that on the ridge selected for Line 3, a takeoff a short distance to the north and away from the chimney would have provided an easier escape route.

Apparently the importance of the general location of Line 3 and, once chosen, the specific location of its takeoff from the rim, were not recognized as warranting top level on-the-ground decisions.

Ground scouting of canyon topography and fuels throughout the day with reference to potentially needed lines and potentials of fire behavior was inadequate, especially in view of the limitations on air scouting under Santa Ana conditions.

3. Crew Location in Canyon

The men were taken down the line into the canyon at night because there was a lack of appreciation of the danger from the fire in the canyon below. In the opinion of the Board, the factors that contributed to this were:

a. Lack of specific information on the fire conditions in San Diego Canyon available for the briefing at the base camp.

b. Emphasis on the danger of the burning-out fire rather than on the main fire in the canyon below, when the Day Division Boss briefed the night overhead.

c. Quiet appearance of the fire as viewed from the rim.

d. The fact that the night overhead had not seen the terrain in daylight.

e. The lack of detailed scouting of the canyon on Sector G during the day.

f. Lack of contact with the Division across the canyon who had a different vantage point of the situation.

2

4. Burning-Out Line

Sound firefighting principles call for burning out the intervening fuels between the control line and the fire edge. The effect of the burning-out fire on the behavior of the main fire and on the planned escape routes is a vital factor influencing decisions on when, where and how to burn out, and where to place men.

Fire behavior is not well enough understood to firmly establish the possible effect of the burning-out fire in pulling the main fire rapidly up the chimney at the site of the disaster. Other factors would have permitted the explosive run in spite of the presence of the burning-out fire. Likewise, the burning-out fire did not cut off the escape route. However, in situations like this, men should not be placed in a possibly untenable position until the effects of the burning-out fire have been determined.

4

5. Lookout

The crew cutting line into the canyon received warning to come out when a crew boss on the upper part of the line saw the fire heating up at a point below the men. While this was a timely warning and resulted in some of the men reaching safety, it did not come soon enough to prevent the tragedy. It is uncertain in the Inaja Fire Disaster that a specifically designated lookout would have given the warning any sooner. However, it is especially important that a lookout be designated when crews are in a possibly dangerous location.

5

6. Water

The shortage of water from the tanker at the time of flareup did not cause or contribute to the tragedy. The flames which raced up the canyon slope were of such height and were extended so far in advance of the burning fuel, that water available from one or several tankers would not have had a material effect.

6

7. Personnel

The leaders on the Inaja Fire were capable and experienced. They were trained in accordance with recognized Forest Service standards. There is, however, need for more intensive advanced fire behavior training for key fire supervisory personnel.

Line crews on the sector where the tragedy occurred were experienced, trained firefighters. Also, on this sector, there were experienced overhead from the local forest and from other forests.

8. Overhead Action

Forest Officers Anderson, Maxwell and Lingo, together with Correctional Officer Wehrung, stayed with their men urging and helping them out even though these officers otherwise had opportunity to escape.

No one in the suppression forces on the Inaja Fire was negligent. In fact, it would be difficult to point to any one who could be classed as careless. Yet, things were done that should not have been; things were not done that should have been. These commissions and omissions could have, and very likely did have, a significant bearing on the accident or on preventing more men escaping to safety.

These commissions and omissions which in retrospect seem to constitute unsound practices are, for the most part, noted and discussed in the Safety Code. They have been the subject of much discussion in our training sessions. Yet, they happened.

These commissions and omissions were made during the heat of battle. But, all future decisions of like nature will be made in the heat of battle. These decisions were made by men who had more experience and training than forces we normally can bring to bear on a fire. A fire today would find no improvement there.

It, therefore, seems to the Board that if the Forest Service, or anyone else, is to lick this fire job, it must considerably broaden the present horizons. Doing "more" of what we are now doing is not going to be enough.

It is within this setting that our recommendations are made.

H. RECOMMENDATIONS

1. Fire Research

Better knowledge of fire behavior must be developed as an essential means of preventing future tragedies. More powerful firefighting methods, including revolutionary methods not presently

conceived are needed for safe, effective attack against mass fires. To do this, a much higher priority must be given to the Service-wide fire research program. Development of adequately equipped and staffed forest fire laboratories and a general strengthening of the forest fire research program is imperative. High priority research jobs are wind surveys in mountain canyons, wind studies in relation to topography, both laboratory and field studies of burning-out fires in relation to convective fire drafts, and large scale projects, such as Operation Fire Stop and Project Skyfire, to develop aerial attack, chemicals, equipment and new techniques.

2. Fire Behavior Evaluation

When dealing with mass fire, experts on fire behavior are needed to evaluate the situation and to assist fire bosses in making sound decisions for safe, effective firefighting. To attain this objective, a number of highly skilled fire behavior men should be developed for assignment to critical fires in all regions. These men should make detailed evaluation of weather, fuels, topography and expected fire action.

3. Fire Fighting Fundamentals.

Experience on this fire has again shown the continuing need for increased emphasis on training and administrative action to get men to follow fundamentals of fire control management.

The Board recommends specific attention to the following fundamentals:

a. Men should not be placed in locations until factors possibly affecting their safety are thoroughly explored and evaluated.

b. The vital decision of control line location must be made by the best qualified overhead on the line.

c. Location of fire lines in accordance with full evaluation of expected fire action and knowledge of ground conditions.

d. Thorough briefing of all overhead personnel.

e. Thorough aerial and ground scouting.

f. Planned liaison between sectors and divisions.

g. Review of weather forecasts by all sector and division overhead.

h. Full and systematic use of communication facilities.

i. Posting of lookouts to give warnings at all possible dangerous places on the line.

4. Fire Overhead Qualifications

Controlling mass forest fires is a difficult and highly technical job. Decisions made in control work are so important that the best men available should be assigned responsible overhead positions. The specifications of these positions should be further reviewed to determine if they are adequate. Salaries, career opportunities and recognition should be commensurate with these responsibilities.

The Board is impressed with the similarity between the recommendations in this report and the recommendations in the reports on the Mann Gulch and the Rattlesnake Fires. This time we urge that a task force be appointed by the Chief to determine ways and means for putting into effect the recommendations of this and the previous reports. We hope that such action will serve to bring about measures necessary to protect the personnel who undertake the essential job of fighting and stopping fires.

THE END

APPENDIX I

FOREST SERVICE WASHINGTON 25, D. C.

To : W. S. Swingler, Assistant Chief November 28, 1956

From : Richard E. McArdle, Chief

Subject: F-CONTROL Suppression (Board of Review - Inaja Fire)

I would like to have you serve as Chairman of a Board of Review on the Inaja Fire which occurred on the Cleveland National Forest November 24, 1956. I am requesting Regional Forester Donald E. Clark of the Rocky Mountain Region, Merle S. Lowden, Chief, Division of Fire Control in this office, Jack S. Barrows, Chief, Division of Fire Research, Intermountain Experiment Station, and Lawrence K. Mays, Assistant Regional Forester, Southern Region, to serve on the Board with you. These men have been selected for their technical ability, proven judgment in fire control, and fair-mindedness.

This review should follow established principles for conducting formal Boards of Fire Review as described in the Forest Service Manual. The scope of investigation should be directed to circumstances, events, and causes which led to the tragic loss of 11 fire fighters. You need not review the entire history and control operations of the fire except, of course, for actions and conditions which relate to the disaster. The results of your deliberations should be summarized in a report as clear-cut and brief as is consistent with the subject and your responsibility, but in any case complete and thorough.

We want facts - what happened, how and why. Then we want those facts studied carefully and evaluated to formulate sound conclusions and recommendations - how could the final outcome, or any of the occurrences or situations leading up to it, have been avoided? Above all, what mistakes or weaknesses or oversights are there that can be prevented in the future? You must follow every possible lead to determine how we can tighten up our safeguards to prevent a similar disaster in the future. We can not return the 11 men to their friends and loved ones but we can do everything in our power to see that similar suffering is never again caused by similar conditions. This obligation is as clear as any ever faced. It will be met. If any person involved in the Forest Service, or outside of it, was negligent we want to know it.

We all know very well that fighting forest fires is dangerous. Human knowledge is not yet capable of foretelling everything that fires or men will do. Because of this, we must use every means to

learn what safety precautions are necessary to protect those who undertake the essential job of fighting and stopping fires. We must control fires as promptly and effectively as possible, but human life is never to be knowingly or carelessly subordinated to other values.

I expect the Board to develop its own plan for conducting the review without any influence or interference from other sources. I say this knowing your judgment will prompt you to have the Board make a thorough and searching study of conditions and factors on the ground where the disaster occurred, and I know you will give County officials and other local people intimately concerned every opportunity to talk with members of the Board.

Comprehensive information collected by the committee of Regional and Washington office men sent to study the case and obtain preliminary information should be available for you before the Board convenes. This committee was organized and started work during the early morning of November 26. They are now making every effort to complete their project without any avoidable delays. The Board, however, should not depend exclusively upon this information; you are empowered to draw on additional sources and to make any additional studies you feel are needed.

I think you know that Regional Forester Connaughton and his staff can be relied upon to furnish whatever assistance is necessary in preparing statements, records, charts, maps and tables which you will need for study. They can help in arranging interviews, meetings and similar details.

You have full authority to request testimony from any Forest Service employee. You may interview any people outside the Forest Service as you judge necessary to obtain facts. I know you will honor and hear anyone who seeks to testify before the Board.

One final word - you may need to meet and talk with some survivors who are close friends or relatives of the unfortunate victims. If this happens, I will be deeply grateful if you, knowing of their deep sorrow, will treat these people with compassion and thoughtfulness. Nevertheless, within these limits, get the facts.

RICHARD E. McARDLE

cc-Donald E. Clark, R-2
Merle S. Lowden, W.O.
Jack S. Barrows, Intermountain Sta.
L. K. Mays, R-8
Region 5

Richard E. McArdle, Chief December 10, 1956

W. S. Swingler, Assistant Chief

F-CONTROL Suppression (Board of Review - Inaja Fire)

When I reached San Diego, California, about 7:30 p.m. on Monday, December 3, Walt Puhn, Supervisor of the Cleveland National Forest, informed me that representatives of the Press were extremely anxious to see me. I agreed to see the reporters at their convenience, and a reporter and photographer from the San Diego Union caught up with me about 8 p.m.

I gave the reporter a summary of what we planned to do. He asked if the investigation was open to the Press and I told him no. The reason I gave was that we believed the boys whom we interviewed would be likely to talk more freely if the Press was not there, and that I wanted to do nothing that even possibly could hamper our getting a full and complete story. I invited them and other members of the Press to accompany the Board the following day, and also expressed a willingness to meet with the Press once or several times each day. He apparently was satisfied, but guessed that his editor would not be happy about the closed meeting.

On Tuesday, December 4, no reporters accompanied us on our trip to the fire even though I had invited them. The first closed meeting was scheduled for 9 a.m., December 5, in a conference room in the U. S. Grant Hotel. Shortly before 9 a.m., two reporters and two photographers, representing both local papers, showed up and asked permission to take some pictures of the Board. We agreed and again gave them an interview. Again, I was asked if the meeting would be open to the Press, and again I said, "No," giving the same reason as previously stated. One reporter questioned my legal authority to exclude him and said he had been in touch with my Washington Office. The other reporter stated he had instructions from his editor not to leave the meeting unless escorted out.

I said I wasn't going to throw anyone out. I thought too much of Forest Service relations with the Press. I did ask them to leave while I held an executive session of the Board. They made no objection to this and withdrew to the hall outside the door.

The Board discussed the matter for about 30 minutes and decided that, while our original position was sound, we could start something that would hamper our investigation to a considerably greater extent than would having reporters present. We therefore decided to open to the

Press these meetings during which witnesses were heard. We also decided to check with the Washington Office to learn what the Press had been told from there.

At 9:30 a.m., I told the reporters the meeting was adjourned until 1 p.m., and they left. The photographers were still with them, presumably for the purpose of taking a picture of my throwing out someone. I called Acting Chief Harper to explain the situation, and he said he would call me back before the 1 p.m. meeting. I then called Regional Attorney Jess Farr to check the legality of any action excluding the Press in the event that that was finally decided upon after further consultation with Harper. Farr told me I had all the authority I needed and he then called the U. S. Attorney in San Diego to give me any further help I might need. Mr. Harris of the local U. S. Attorney's Office suggested we move the investigation to the Federal Building where we could have more control of those who entered. This move, of course, never became necessary.

After Harper called back and gave us his and the Department's approval of the Board's decision to open our meetings to the Press, Supervisor Fuhn and I arranged to meet the editors of the two local papers to discuss the situation. I explained the reason for our original position and the reason for the change. I also told them that they had a responsibility for objective reporting and cautioned against picking up one bit of information out of context and blowing it up out of proportion to its real value. They promised not to sensationalize the story. This meeting was extremely cordial.

While Fuhn and I were with the editors, Marie Louden had set up facilities for the reporters in the investigation room, and the interviewing of witnesses finally got underway at 1:45 p.m. on December 5. The reporters covered every open session and did a good job of reporting. They, of course, were not present during the Board's review of the testimony and during our evaluations and report-writing. I announced our report would be sent to the Chief of the Forest Service, and that if any public release of our findings and recommendations were made, they would come from Washington. This satisfied the reporters and after Thursday, December 6, we were left strictly alone.

I do not believe that the presence of the Press prevented the Board from getting the facts in this case. It did make the job more difficult.

News clippings covering the meeting are attached.

Attachments

To : Richard E. McArdle December 11, 1956

From : Board of Review, Inaja Fire

Subject: F, CONTROL
Suppression
(Board of Review - Inaja Fire)

Please refer to your letter of November 28, 1956, to Mr. Swingler requesting us to serve as a Board of Review of the Inaja Fire Disaster of November 25, 1956.

Our factual report with conclusions and recommendations is attached.

We would like to commend the personnel of California Region and the California Forest and Range Experiment Station for their splendid assistance to the Board with all phases of the investigation.

Respectfully submitted,

W. S. Swingler, Chairman
Washington, D. C.

Donald E. Clark
Denver, Colorado

L. K. Mays
Lawrence K. Mays
Atlanta, Georgia

Jack S. Barrows
Missoula, Montana

Merle S. Lowden, Secretary
Washington, D. C.

APPENDIX II

Qualifications of Personnel

Name	Fire Experience (B)	(D)	(E)	Fire Qualification
Anderson, Albert W.	(At least 24 fires)			Sector, Cat Boss
Bangsberg, Ralph C.	10	10	23	Division Boss
Brown, Peter	4	1	4	Tank Truck Operator
Burrows, Robert	(16 years experience)			Sector Boss
Curran, Jack P.	25	15	30	Line Boss
Davis, John V.	65	58	73	Fire Boss
Dillingham, Jack	5	7	27	Line & Sector Boss
Howard, Wilbur V.	-	3	13	Division Boss
James, Ralph A.	(Extensive)			Fire Boss
Joseph, Kenneth W.	14	5	13	Crew Boss
Maxwell, Forrest R.	(78 hrs. on 18 fires)			In Training
McBride, Robert S.	2	6	14	Fire Boss
Robinson, Glenn	(at least 15 large fires)			Line Boss
Roskie, George F.	(16 fires 1949-56)			Safety Officer & Plans Chief
Street, Danny L.	7	-	6	Crew Boss

Training Received by Key Men Connected with the Disaster

Albert W. Anderson

Participation in district fire training meetings - mostly basic subjects. In 1954, 2 days training session of large fire organization. In 1949, 2 days session on large fire organization. In 1953, job relations training session.

Robert Burrows

Burrows attended at least 4 forest guard fire training sessions. He has worked on a large number of project fires. Burrows was considered an outstanding firefighter because he had fire sense, he knew just what to do on a fire.

Burrows has received training in line construction, hose lays, and use of fire tankers under him on the Descanso District. He was judged a good fireman by his ranger, and assisted the Cleveland on their fire training sessions.

Jack Curran

Attended Regional FCA training meeting 3 weeks in 1945 at Los Prietos. Attended fire behavior training meeting in 1944 at Hunter Liggett, had actual burning conditions (field problems).

In 1955, for 3 days at Los Prietos, attended advanced fire training session for Rangers, FCA and experienced men. Was instructor in 1956 at Fort Ord (Army Fire Training). Yearly for past 10 years trained Soledad Prison inmates in firefighting. Yearly trained State Park employees at Big Sur in firefighting. Yearly for the past 5 years trained Hunter Liggett military personnel in firefighting (one or more sessions per year). Instructor in Forest-wide fire training meetings.

Jack Dillingham

Attended the Los Padres Advanced Fire Training Meeting in 1955, 3 days at Los Prietos. Has been an instructor for the past 2 years in the Forest-wide Training Meeting.

Wilbur V. Howard

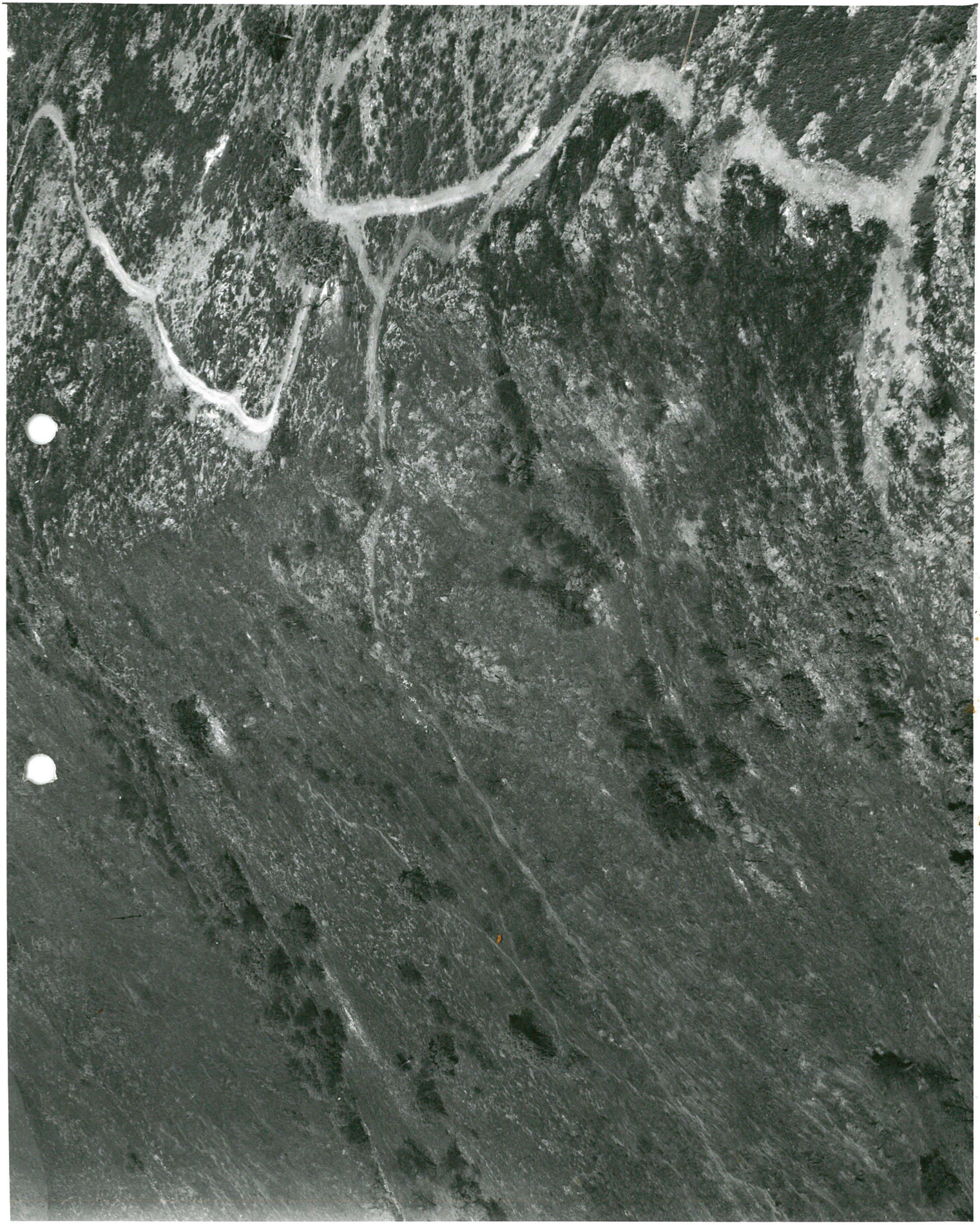
Received training in large fire organization in Forest-wide fire training meetings in 1954, 1955 and 1956. Attended Junior Forester orientation class at Los Prietos last year.

Glenn Robinson

Received training in large fire organization at Forest-wide fire training meeting consisting mostly of training in the duties of each position. Assigned last fall as a member of a Board of Fire Review for the Haystack Fire as a training assignment.

APPENDIX II

PHOTOGRAPH 1



APPENDIX IV PHOTOGRAPH 2